JOURNAL OF
CRYSTAL GROWTH

Volume 208 (2000) Nos. 1–4

Abstracted/Indexed in: Aluminium Industry Abstracts; Chemical Abstracts; Current Contents: Physical, Chemical and Earth Sciences; EI Compendex Plus; Engineered Materials Abstracts; Engineering Index: INSPEC; Metals Abstracts

CONTENTS

Classical semiconductors

A new way to achieve both selective and lateral growth by molecular beam epitaxy: low angle incidence microchannel epitaxy
G. Bacchin and T. Nishinaga 1

Comparison of hydrazine, dimethylhydrazine, and t-butylamine nitrogen sources for MOVPE growth of GaInNAs for solar cells
D.J. Friedman, A.G. Norman, J.F. Geisz and S.R. Kurtz 11

Influence of growth rate on the structure of thick GaN layers grown by HVPE
T. Paskova, E.M. Goldys, R. Yakimova, E.B. Svedberg, A. Henry and B. Monemar 18

High purity GaSb grown by LPE in a sapphire boat
J. Olvera-Hernández, F. De Anda, H. Navarro-Contreras and V.A. Mishurnyi 27

Direct observation of LPE heterogrowth of GaAs on a GaP substrate
A. Tanaka, N. Izumi, M. Kimura and T. Sukegawa 33

Structural properties of $Al_xGa_{1-x}N$ grown on sapphire by molecular beam epitaxy
J.W. Kim, C.-S. Son, I.-H. Choi, Y.K. Park, Y.T. Kim, O. Ambacher and M. Stutzmann 37

A new double crucible technique for LEC growth of In-doped GaAs crystals
J. He and S. Kou 42

Lattice contraction and electrical conduction of heavily carbon doped AlAs layers grown by atomic layer epitaxy
S. Hirose, H. Ibuka, A. Yoshida, N. Kano, K. Hara, H. Munekata and H. Kukimoto 49

Polytypism in epitaxially grown gallium nitride
H. Selke, V. Kirchner, H. Heinke, S. Einfeldt, P.L. Ryder and D. Hommel 57

Analysis of Be doping of InGaP lattice matched to GaAs
J. Bettini, M.M.G. De Carvalho, M.A. Cotta, M.A.A. Pudenzi, N.C. Frateschi, A. Silva Filho, L.P. Cardoso and R. Landers 65

Quasi-thermodynamic analysis of MOVPE of AlGaN
D.-C. Lu and S. Duan 73

Effect of Sb pre-deposition on the compositional profiles in MOVPE-grown InAsSb/InAs(1 1 1) multi-quantum wells
M.R. Pillai, S.C. Theiring, S.A. Barnett, B.W. Wessels, A. Desikan and E.P. Kvam 79

Modeling and experimental verification of transport and deposition behavior during MOVPE of $Ga_{1-x}In_xP$ in the Planetary Reactor
M. Dauelsberg, L. Kadinski, Yu.N. Makarov, T. Bergunde, G. Strauch and M. Weyers 85

Molecular beam epitaxial growth of InAs self-assembled quantum dots with light-emission at 1.3 μm
Y. Nakata, K. Mukai, M. Sugawara, K. Ohtsubo, H. Ishikawa and N. Yokoyama 93

Growth and characterization of GaN single crystals
C.M. Balkaş, Z. Sitar, L. Bergman, I.K. Shmagin, J.F. Muth, R. Kolbas, R.J. Nemanich and R.F. Davis 100

Electronic characteristics of InAs/GaAs self-assembled quantum dots by deep level transient spectroscopy
H.L. Wang, D. Ning, H.J. Zhu, F. Chen, H. Wang, X.D. Wang and S.L. Feng 107

Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy
G. Almuneau, E. Hall, S. Mathis and L.A. Coldren 113

GaAs film deposited on $SrTiO_3$ substrate by molecular beam epitaxy
Q.X. Zhao, O. Zsebök, U. Södervall, M. Karlsteen, M. Willander, X.Q. Liu, Y.D. Chen, W. Lu and S.C. Shen 117

Diffusion of acceptors in n-type and semi-insulating InP
B. Tuck 123

Surface migration effect and lateral vapor-phase diffusion effect for InGaAsP/InP narrow-stripe selective metal-organic vapor-phase epitaxy
Y. Sakata, Y. Inomoto and K. Komatsu 130

Contents continued on final page

0022-0248(200001)208:1-4;1-S

JOURNAL OF
CRYSTAL GROWTH

Volume 208 (2000) Nos. 1–4

Abstracted/Indexed in: Aluminium Industry Abstracts; Chemical Abstracts; Current Contents: Physical, Chemical and Earth Sciences; EI Compendex Plus; Engineered Materials Abstracts; Engineering Index: INSPEC; Metals Abstracts

CONTENTS

Classical semiconductors

A new way to achieve both selective and lateral growth by molecular beam epitaxy: low angle incidence microchannel epitaxy
G. Bacchin and T. Nishinaga 1

Comparison of hydrazine, dimethylhydrazine, and t-butylamine nitrogen sources for MOVPE growth of GaInNAs for solar cells
D.J. Friedman, A.G. Norman, J.F. Geisz and S.R. Kurtz 11

Influence of growth rate on the structure of thick GaN layers grown by HVPE
T. Paskova, E.M. Goldys, R. Yakimova, E.B. Svedberg, A. Henry and B. Monemar 18

High purity GaSb grown by LPE in a sapphire boat
J. Olvera-Hernández, F. De Anda, H. Navarro-Contreras and V.A. Mishurnyi 27

Direct observation of LPE heterogrowth of GaAs on a GaP substrate
A. Tanaka, N. Izumi, M. Kimura and T. Sukegawa 33

Structural properties of $Al_xGa_{1-x}N$ grown on sapphire by molecular beam epitaxy
J.W. Kim, C.-S. Son, I.-H. Choi, Y.K. Park, Y.T. Kim, O. Ambacher and M. Stutzmann 37

A new double crucible technique for LEC growth of In-doped GaAs crystals
J. He and S. Kou 42

Lattice contraction and electrical conduction of heavily carbon doped AlAs layers grown by atomic layer epitaxy
S. Hirose, H. Ibuka, A. Yoshida, N. Kano, K. Hara, H. Munekata and H. Kukimoto 49

Polytypism in epitaxially grown gallium nitride
H. Selke, V. Kirchner, H. Heinke, S. Einfeldt, P.L. Ryder and D. Hommel 57

Analysis of Be doping of InGaP lattice matched to GaAs
J. Bettini, M.M.G. De Carvalho, M.A. Cotta, M.A.A. Pudenzi, N.C. Frateschi, A. Silva Filho, L.P. Cardoso and R. Landers 65

Quasi-thermodynamic analysis of MOVPE of AlGaN
D.-C. Lu and S. Duan 73

Effect of Sb pre-deposition on the compositional profiles in MOVPE-grown InAsSb/InAs(1 1 1) multi-quantum wells
M.R. Pillai, S.C. Theiring, S.A. Barnett, B.W. Wessels, A. Desikan and E.P. Kvam 79

Modeling and experimental verification of transport and deposition behavior during MOVPE of $Ga_{1-x}In_xP$ in the Planetary Reactor
M. Dauelsberg, L. Kadinski, Yu.N. Makarov, T. Bergunde, G. Strauch and M. Weyers 85

Molecular beam epitaxial growth of InAs self-assembled quantum dots with light-emission at 1.3 μm
Y. Nakata, K. Mukai, M. Sugawara, K. Ohtsubo, H. Ishikawa and N. Yokoyama 93

Growth and characterization of GaN single crystals
C.M. Balkaş, Z. Sitar, L. Bergman, I.K. Shmagin, J.F. Muth, R. Kolbas, R.J. Nemanich and R.F. Davis 100

Electronic characteristics of InAs/GaAs self-assembled quantum dots by deep level transient spectroscopy
H.L. Wang, D. Ning, H.J. Zhu, F. Chen, H. Wang, X.D. Wang and S.L. Feng 107

Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy
G. Almuneau, E. Hall, S. Mathis and L.A. Coldren 113

GaAs film deposited on $SrTiO_3$ substrate by molecular beam epitaxy
Q.X. Zhao, O. Zsebök, U. Södervall, M. Karlsteen, M. Willander, X.Q. Liu, Y.D. Chen, W. Lu and S.C. Shen 117

Diffusion of acceptors in n-type and semi-insulating InP
B. Tuck 123

Surface migration effect and lateral vapor-phase diffusion effect for InGaAsP/InP narrow-stripe selective metal-organic vapor-phase epitaxy
Y. Sakata, Y. Inomoto and K. Komatsu 130

Contents continued on final page

0022-0248(200001)208:1-4;1-S

Temperature dependence of photoluminescence from InAsP/InP strained quantum well structures grown by metalorganic chemical vapor deposition
C.-Y. Lee, M.-C. Wu, H.-P. Shiao and W.-J. Ho 137

Gas-source molecular beam epitaxial growth and thermal annealing of GaInNAs/GaAs quantum wells
H.P. Xin, K.L. Kavanagh and C.W. Tu 145

Gallium nitride thin layers via a liquid precursor route
M. Puchinger, T. Wagner, D. Rodewald, J. Bill, F. Aldinger and F.F. Lange 153

Observation of two independent sources for arsenic carryover
Y. Moon, T.-W. Lee, S. Yoon, K. Yoo and E. Yoon 160

Single crystalline bulk growth of $In_{0.3}Ga_{0.7}As$ on GaAs seed using the multi-component zone melting method
S. Kodama, Y. Furumura, K. Kinoshita, H. Kato and S. Yoda 165

InGaAs single crystal with a uniform composition in the growth direction grown on an InGaAs seed using the multicomponent zone growth method
Y. Nishijima, K. Nakajima, K. Otsubo and H. Ishikawa 171

Unstable composition region in the wurtzite $B_{1-x-y}Ga_xAl_yN$ system
C.H. Wei and J.H. Edgar 179

Molecular beam epitaxy growth of antimonide avalanche photodetectors with InAs/AlSb superlattice as the n-type layer
X.-C. Cheng and T.C. McGill 183

The morphology and formation mechanism of aluminum nitride nanocrystals synthesized by chemical vapor deposition
N.-C. Wu, M.-S. Tsai, M.-C. Wang and H.-S. Liu 189

Effect of V/III ratio and temperature dependence of carrier concentration in partially ordered and disordered $Ga_{0.52}In_{0.48}P$ grown on GaAs substrates
S.F. Yoon, K.W. Mah, H.Q. Zheng and P.H. Zhang 197

High crystalline quality ZnBeSe grown by molecular beam epitaxy with Be–Zn co-irradiation
S.P. Guo, Y. Luo, W. Lin, O. Maksimov, M.C. Tamargo, I. Kuskovsky, C. Tian and G.F. Neumark 205

A novel "multi-tube" vapour growth system and its application to the growth of bulk crystals of cadmium telluride
J.T. Mullins, J. Carles, N.M. Aitken and A.W. Brinkman 211

In situ studies of $Cd_{1-x}Zn_xTe$ nucleation and crystal growth
B.W. Choi and H.N.G. Wadley 219

Luminescent studies of alloy $Zn_xCd_{1-x}Se$ quantum dots grown on ZnSe by metalorganic chemical vapor-phase deposition
X.B. Zhang and S.K. Hark 231

Characterizations of ZnSe single crystals grown by physical vapor transport
C.-H. Su, M. Dudley, R. Matyi, S. Feth and S.L. Lehoczky 237

Formation of InSb by annealing Sb_2S_3–In thin films
M.T.S. Nair, Y. Rodríguez-Lazcano and P.K. Nair 248

Surface reconstruction and crystal structure of MgSe films grown on ZnTe substrates by MBE
H.-M. Wang, J.-H. Chang, T. Hanada, K. Arai and T. Yao 253

Growth of ZnS : Tm thin films by MOCVD
C.-T. Hsu 259

Modified growth of $Cd_{1-x}Zn_xTe$ single crystals
S.-f. Zhu, B.-j. Zhao, Q.-f. Li, F.-l. Yu, S.-y. Shao and X.-h. Zhu 264

Modeling studies of PVT growth of ZnSe: current status and future course
N. Ramachandran and C.-H. Su 269

Study on defects in EMCZ-Si crystal by infrared light scattering tomography
M. Ma, N. Nango, T. Ogawa, M. Watanabe and M. Eguchi 282

Structural and electrical properties of silicon epitaxial layers grown by LPE on highly resistive monocrystalline substrates
R. Kopecek, K. Peter, J. Hötzel and E. Bucher 289

Phase modifications in polysilicon films with fibrous and dendritic structure
N.G. Nakhodkin, N.P. Kulish, T.V. Rodionova and A.M. Strutinsky 297

Dislocation effect on crystal–melt interface: an in situ observation of the melting of silicon
Y. Wang and K. Kakimoto 303

Thermophysical properties measurement of molten silicon by high-temperature electrostatic levitator: density, volume expansion, specific heat capacity, emissivity, surface tension and viscosity
W.-K. Rhim and K. Ohsaka 313

Contents continued on preceding page

Doping during low-temperature growth of materials for n–p–n Si/SiGe/Si heterojuction bipolar transistor by gas source molecular beam epitaxy
J.P. Liu, D.D. Huang, J.P. Li, Y.X. Lin, D.Z. Sun and M.Y. Kong 322

Three-dimensional simulation of vertical zone-melting crystal growth: symmetry breaking to multiple states
C.W. Lan and M.C. Liang 327

Control of thermal conditions during crystal growth by inverse modeling
M. Kurz and G. Müller 341

Electronic materials

Growth of $Y_{1-z}Nd_zBa_2Cu_3O_x$ single crystals
D.K. Aswal, T. Mori, Y. Hayakawa and M. Kumagawa 350

High quality $YBa_2Cu_3O_{7-\delta}/PrBa_2Cu_3O_{7-\delta}$ multilayers grown by pulsed injection MOCVD
V. Galindo, J.P. Sénateur, A. Abrutis, A. Teiserskis and F. Weiss 357

Growing high-quality C_{60} films by using Sb buffer layer
W. Xu and J.G. Hou 365

Float-zone crystal growth of $CdGeAs_2$ in microgravity: numerical simulation and experiment
M.Z. Saghir, D. Labrie, A. Ginovker, B.E. Paton, A.E. George, K. Olson and A.M. Simpson 370

Characterization of $CdGeAs_2$ grown by the float zone technique under microgravity
D. Labrie, A.E. George, A.M. Simpson, B.E. Paton, A. Ginovker and M.Z. Saghir 379

Effects of a low-temperature buffer layer on structural properties of ZnO epilayers grown on (1 1 1)CaF_2 by two-step MBE
H.J. Ko, Y.F. Chen, Z. Zhu, T. Hanada and T. Yao 389

Epitaxial growth of MnAs on single-crystalline Mn–Zn ferrite substrates
T. Ikeda, H. Fujioka, S. Hayakawa, K. Ono, M. Oshima, M. Yoshimoto, H. Maruta, H. Koinuma, K. Inaba and R. Matsuo 395

Growth of fcc Co in sputter-deposited Co/Au multilayers with (1 1 1) texture
Th. Kehagias, Ph. Komninou, C. Christides, G. Nouet, S. Stavroyiannis and Th. Karakostas 401

Cross-sectional cleavages of SiC for evaluation of epitaxial layers
M. Syväjärvi, R. Yakimova and E. Janzén 409

Thermal analysis and synthesis from the melts of Cu-based quaternary compounds Cu–III–IV–VI_4 and Cu_2–II–IV–VI_4 (II = Zn, Cd; III = Ga, In; IV = Ge, Sn; VI = Se)
H. Matsushita, T. Maeda, A. Katsui and T. Takizawa 416

Strain relaxation in PbSnSe and PbSe/PbSnSe layers grown by liquid-phase epitaxy on (1 0 0)-oriented silicon
C.P. Li, P.J. McCann and X.M. Fang 423

Growth of silicon carbide by sublimation sandwich method in the atmosphere of inert gas
A.S. Segal, A.N. Vorob'ev, S.Yu. Karpov, E.N. Mokhov, M.G. Ramm, M.S. Ramm, A.D. Roenkov, Yu.A. Vodakov and Yu.N. Makarov 431

Growth temperatures and microstructure selection during Bridgman solidification of hypereutectic Al–La and Al–Ce alloys
A. Juarez-Hernandez and H. Jones 442

Initial growth of 3,4,9,10-perylenetetracarboxylic-dianhydride (PTCDA) on Au(1 1 1): a scanning tunneling microscopy study
I. Chizhov, A. Kahn and G. Scoles 449

Effect of internal radiative heat transfer on transition of flow modes in CZ oxide melt
M. Kobayashi, T. Tsukada and M. Hozawa 459

Solid solution single crystal growth of the aluminum tungstate–scandium tungstate system by a modified CZ method
N. Imanaka, M. Hiraiwa, S. Tamura, G. Adachi, H. Dabkowska and A. Dabkowski 466

Vanadium transition metal oxide films obtained by annealing under room atmosphere of metal layers sequentially deposited
E. Baba Ali, J.C. Bernède and P. Le Ray 471

Crystal growth, thermal and optical properties of $SmCa_4O(BO_3)_3$ crystal
S. Zhang, H. Yang, Z. Cheng, X. Liu and H. Chen 482

The study of a self-frequency-doubling laser crystal $Nd^{3+}:GdAl_3(BO_3)_4$
C. Tu, M. Qiu, Y. Huang, X. Chen, A. Jiang and Z. Luo 487

Growth and characterization of MgO doped near stoichiometric $LiNbO_3$ crystals as a new nonlinear optical material
K. Niwa, Y. Furukawa, S. Takekawa and K. Kitamura 493

Contents continued on preceding page

Floating-zone growth of rutile single crystals inclined at 48° to the *c*-axis
M. Higuchi, K. Hatta, J. Takahashi, K. Kodaira, H. Kaneda and J. Saito 501

The influence of temperature distribution upon the structure of $LiNbO_3$ crystal rods grown using the LHPG method
J.-C. Chen and Y.-C. Lee 508

Solution growth; industrial, biological and molecular crystallization

Alignment mechanisms between particles in crystalline aggregates
A.P. Collier, C.J.D. Hetherington and M.J. Hounslow 513

The role of dislocations, integral strain, and supersaturation on the growth rates of sodium nitrate
C.M. Jones, M.A. Larson, R.I. Ristic and J.N. Sherwood 520

Monitoring crystal dissolution at nanometer resolution using laser reflectometry
P.J. Eggington and A.G. Taylor 525

Crystallization kinetics of ammonium perchlorate in MSMPR crystallizer
S.Ü. Tanrıkulu, İ. Eroğlu, A.N. Bulutcu and S. Özkar 533

Low-temperature preparation of highly (1 1 1) oriented PZT thin films by a modified sol–gel technique
X.J. Meng, J.G. Cheng, B. Li, S.L. Guo, H.J. Ye and J.H. Chu 541

Growth habit of rutile and α-Al_2O_3 crystals
W.-J. Li, E.-W. Shi and Z.-W. Yin 546

Study of ammonium chloride crystallization in a mixed vessel
P. Sessiecq, F. Gruy and M. Cournil 555

Spherulitic crystallization of 3-nitro-1,2,4-triazol-5-one in water + *N*-methyl-2-pyrrolidone
K.-J. Kim 569

Crystallization of some heavy-metal phosphates alone and in the presence of calcium ion
M. Ayati and H.E. Lundager Madsen 579

New method for the production of silver halide tabular crystals
A. Millan 592

Growth of potassium sulfate crystals in the presence of organic dyes: in situ characterization by atomic force microscopy
A. Mauri and M. Moret 599

Theoretical morphology of adipic acid crystals
G. Pfefer and R. Boistelle 615

The evolution of growth modes and activity of growth sources on canavalin investigated by in situ atomic force microscopy
T.A. Land and J.J. De Yoreo 623

Effects of pressure on growth kinetics of tetragonal lysozyme crystals
Y. Suzuki, S. Miyashita, G. Sazaki, T. Nakada, T. Sawada and H. Komatsu 638

Effects of a magnetic field on the growth rate of tetragonal lysozyme crystals
S.-i. Yanagiya, G. Sazaki, S.D. Durbin, S. Miyashita, K. Nakajima, H. Komatsu, K. Watanabe and M. Motokawa 645

Cessation of growth in crystals
C. Falcón Rodríguez, S. Aguilera Morales and F. Falcón Rodríguez 651

Crystallization of proteinase K complexed with substrate analogue peptides on US space missions STS-91 and STS-95
S. Eschenburg, M. Degenhardt, K. Moore, L.J. DeLucas, K. Peters, S. Fittkau, W. Weber and C. Betzel 657

Growth kinetics and motion of thaumatin crystals during USML-2 and LMS microgravity missions and comparison with earth controls
B. Lorber, J.D. Ng, P. Lautenschlager and R. Giegé 665

Pressure dependence of subtilisin crystallization kinetics
R.Y. Waghmare, J.N. Webb, T.W. Randolph, M.A. Larson and C.E. Glatz 678

General subjects

Nucleation-limited aggregation of crystallites in fractal growth
X.-Y. Liu, M. Wang, D.-W. Li, C.S. Strom, P. Bennema and N.-B. Ming 687

Growth characteristics of boehmite-derived ultrafine theta and alpha-alumina particles during phase transformation
H.-L. Wen and F.-S. Yen 696

Morphological instability of the austenite growth front in a laser remelted iron–carbon–silicon alloy
M.S.F. Lima and H. Goldenstein 709

A visualization and computational study of horizontal Bridgman crystal growth
C.W. Lan, M.C. Su and M.C. Liang 717

Contents continued on preceding page

Analytic solution for a non-axisymmetric isothermal dendrite
G.B. McFadden, S.R. Coriell and R.F. Sekerka 726

Similarity solutions describing the melting of a mushy layer
D.L. Feltham and M.G. Worster 746

A parametric study of segregation effects during vertical Bridgman crystal growth with an axial magnetic field
N. Ma and J.S. Walker 757

Spacing in solidification of dendritic arrays
L. Makkonen 772

Limits of constitutional undercooling and interfacial liquid compositions during steady-state directional solidification of binary alloys at various interface velocities
S. Srikanth, P. Ramachandrarao and Z. Chvoj 779

Priority communications

MBE growth and X-ray study of high-quality cubic-GaN on GaAs(0 0 1)
Z.Q. Li, H. Chen, H.F. Liu, J.H. Li, L. Wan, S. Liu, Q. Huang and J.M. Zhou 786

Effects of rapid thermal annealing on self-assembled InGaAs/GaAs quantum dots superlattice
Q.D. Zhuang, J.M. Li, X.X. Wang, Y.P. Zeng, Y.T. Wang, B.Q. Wang, L. Pan, J. Wu, M.Y. Kong and L.Y. Lin 791

Two-step method to grow InAs epilayer on GaAs substrate using a new prelayer
H. Chen, L.C. Cai, C.L. Bao, J.H. Li, Q. Huang and J.M. Zhou 795

Surfactant effect of Mn on the formation of self-organized InAs nanostructures
S.P. Guo, A. Shen, H. Yasuda, Y. Ohno, F. Matsukura and H. Ohno 799

Relaxation of anisotropic domain tilting along vertical growth direction in selectively lateral overgrown GaN by hydride vapor phase epitaxy
C. Kim, J. Yi, S. Kim, M.H. Kim, M. Yang, Y. Choi, T.-K. Yoo and S.T. Kim 804

Discontinuous growth of primary naphthalene plate in camphor–naphthalene eutectic system
M.-J. Suk and K. Leonartz 809

Author index 813

Subject index 821

Instructions to Authors 824

CONTENTS direct

This journal is part of **ContentsDirect,** the ***free*** alerting service which sends tables of contents by e-mail for Elsevier Science books and journals. You can register for **ContentsDirect** online at: **www.elsevier.nl/locate/contentsdirect**